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Development of a Costing Method for Pick-up and Delivery Activities

Summary Report

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TP6530E

DEVELOPMENT OF

A COSTING METHOD

FOR PICK-UP AND DELIVERY ACTIVITIES

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SUMMARY REPORT

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CGI - INFORMATION SYSTEMS AND MANAGEMENT CONSULTANTS INC.

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17. Abstract

In recent years, gradual deregulation and increasing competition in the Canadian trucking industry have emphasized the need for trucking companies to be fully aware of their operations costs.

The proposed costing method allows the calculation of the real cost of each shipment's pick-up and delivery. Regrouping the individual costs by weight categories provides the average cost of a company, a geographical area or a particular customer. This method is applicable to all types of carriers or freight. It is based on the time distribution approach and it uses real times, which are as specific as possible, rather than standard or average times.

This method also helps companies improve their operations management by giving them statistics for identifying inefficiencies related to geographical areas, customers, type of freight or type of vehicles.

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17. Résumé

La déréglementation graduelle du transport routier et la concurrence de plus en plus vive dans cette industrie font qu'il devient important pour les compagnies de transport de connaître de façon détaillée les coûts associés à leurs opérations.

La méthode de calcul proposée fournit le coût réel de chaque activité de messagerie. En regroupant ces coûts individuels par brochette de poids, on obtient le prix de revient moyen d'une compagnie, d'un territoire ou d'un client particulier. Cette méthode s'applique à tous les types de marchandises ou de transporteurs. Elle est basée sur l'approche de distribution des temps et elle utilise des temps réels les plus spécifiques possibles plutôt que des temps standard ou moyens.

Cette méthode permet aussi aux compagnies de transport d'améliorer la gestion de leurs opérations en leur donnant des informations statistiques pour identifier les inefficacités au niveau des zones, des clients, des types de marchandises transportées ou des véhicules utilisés.

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1. INTRODUCTION

In recent years, gradual deregulation and increasing competition in the Canadian trucking industry have emphasized the need for trucking companies to be fully aware of their operations costs.

The Quebec Trucking Association, in collaboration with the Quebec Rate Bureau, the Quebec Transport Department and Transport Canada, has undertaken the development of a pick-up and delivery service costing method.

Consequently, the Association set up a study committee in order to define the guidelines and calculation rules of the proposed method. Later on, CGI Information Systems and Management Consultants Inc. was given the mandate to elaborate and validate the method and, finally, to develop the tools required for its application.

2. OBJECTIVES AND APPROACH OF THE COSTING METHOD

First of all, this method will be used to calculate and analyze the pick-up and delivery service costs. In addition, it will provide information for the operational management of this activity.

Following are the principles which guided the method's design:

- it must be integrated into an overall costing formula for the trucking industry;
- it must be applicable to all types of carriers or freight;
- it is based on the time distribution approach;
- it must use real times that are as specific as possible, rather than standard or average times.

3. DESCRIPTION OF THE METHOD

The cost of the pick-up and delivery of a shipment is equal to the total cost of each separate activity (pick-up and delivery) composing the transport movement. The cost of a transport activity is equal to the product of the time charged off to the activity by the labor and vehicle cost per hour. To these calculated direct costs must be added the administration overhead.

Following is a short description of the proposed method's three components, namely: time distribution, costs per hour, and overhead allocation.

a) Time distribution:

Time charged off to a pick-up and delivery activity is equal to the total of the following six time elements:

- **a driver's down time** of a given day (i.e. breaks, vehicle problems, waiting for calls, etc.) is distributed over the whole of the shipments picked-up or delivered by this driver in the day;

- the **return route time** to the area is distributed over the whole of the run's shipments;

- the **interclients route time** (i.e. moving between two consecutive stops) and **the waiting time** at the client's are collected individually for each stop. These times are distributed over all the shipments of the stop;

- the **freight's loading and unloading time** at the client's is also collected individually for each stop. This time is distributed in proportion to the shipment's weight on the total weight of all the shipments of the stop;

- finally, **trailer time** , when the trailer is left at the client's, can also be calculated optionally. It is distributed in proportion to the shipments' weight.

The first five elements mentioned are multiplied by the total of the labor, motor vehicle and trailer costs per hour, while the trailer time is multiplied only by this vehicle's cost per hour.

b) Costs per hour:

Costs per hour are calculated periodically (preferably every three months) from the company's accounting data.

The method uses three costs per hour, namely:

- Labor cost per hour

  This rate is calculated for each category of drivers. It includes all costs directly associated to drivers, (i.e. wages, fringe benefits and overtime).

- Motor vehicles and trailers' costs per hour

  These rates are calculated by branch and by class of motor vehicle or trailer. They include fuel, maintenance, repairs, depreciation, financing, registration and insurance costs, as well as other costs directly related vehicles.

c) Overhead allocation

Overhead expenses are added to the previously calculated direct costs. There are two types of overhead expenses: expenses directly chargeable to the pick-up and delivery service, and other overhead expenses that are not related to one of the trucking company's operations sectors (i.e. pick-up and delivery, dock and rehandling and linehaul).

Pick-up and delivery overhead esentially covers costs related to dispatchers. A cost per stop is periodically calculated for each terminal and the cost chargeable to the shipment is obtained by dividing this unit cost by the number of shipments handled at the stop.

For other overhead expenses, a percentage of these charges on all the other costs is calculated periodically. The total cost of a shipment is obtained by marking-up direct costs chargeable to the shipment by this percentage.

4. OVERVIEW OF THE METHOD HANDBOOK

The application of this costing method will modify the tasks of people involved, directly or indirectly, in the pick-up and delivery work. Thus, the driver will write down his day's activities in detail. This information will then be processed by the computer to calculate the cost of each shipment and produce various statistical and management reports. Finally, the company's managers will receive these reports which they will analyze so as to identify inefficiencies in current operations and study the costs associated to the various transport operations.

Obviously, before applying the method on a regular basis, each company will have to do some preparation work, consisting in classifying the resources allocated to the pick-up and delivery service and in preparing individuals involved in this operation.

A handbook (TP6531F, available at the TDC) was developed in order to help companies apply the pick-up and delivery costing method. This handbook deals with the following topics:

- calculation principles and rules of the method;
- preliminary work for the application of the method;
- new workflows when the method is applied;
- instructions on how to fill in complete the driver's activity report;
- instructions to calculate the costs per hour (tables are suggested to facilitate those calculations);
- contents and application of the management reports produced.

5. REQUIRED TOOLS

As defined in the guide, tools required to apply the method are: the driver's activity report, the costs per hour calculating tables and a computerized system.

Indeed, the volume of the data calls for a computerized tool to perform the calculations required for the method. The processing logic has been described in a document called "Functional Desing of The Pick-Up and Delivery Costing System". This document can be obtained at the Quebec Trucking Association.

6. CONCLUSION

The pick-up and delivery costing method is a tool that will allow the calculation of each shipment's real cost. Regrouping the individual costs by weight categories will give the average cost of a company, a geographical area or a particular client.

This method will also help companies improve their operations management by giving them statistics for:

- selecting vehicles for daily operations;
- improving the territory segmentation;
- identifying inefficiencies related to geographical areas, clients, types of freight carried, etc.;
- determine the desirable specialization(s)for the company.

In addition, it will provide the Quebec Trucking Association, the Quebec Rate Bureau and the various governments with useful data to perform punctual analyses on the trucking industry.

Finally, in order to obtain the global cost of a transport movement, this method should be completed with costing methods for other parts of the transport movement, i.e. the dock and rehandling activities and linehaul transport.